

WHAT IS CLAIMED IS:

1. A method for altering gene expression, comprising:  
providing a plurality of target cells each expressing a chimeric RNA transcript  
5 that has a subject RNA operably linked to a universal target RNA, wherein at least two of  
the plurality of target cells have different subject RNAs, and wherein all of said plurality  
of target cells have the same universal target RNA; and  
introducing into said plurality of target cells a universal interfering RNA targeting  
said universal target RNA.

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2. The method of Claim 1, wherein said step of providing said plurality of  
cells comprises the steps of:  
providing a plurality of expression cassettes each being capable of expressing said  
chimeric RNA transcript, and  
15 introducing said plurality of expression cassettes into a plurality of target cells.

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3. The method of Claim 1, wherein the plurality of target cells possess an  
endogenous equivalent of the subject RNA, and are capable of carrying out transitive  
RNA interference.

4. The method of Claim 1, wherein the step of introducing said universal  
interfering RNA is by way of introducing a DNA that directs the in vivo transcription of  
said universal interfering RNA.

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5. The method of Claim 1, wherein each of said target cells contains an  
expression cassette capable of directing the expression of said universal interfering RNA  
and the step of introducing said universal interfering RNA is by way of inducing the in  
vivo transcription of said universal interfering RNA from said expression cassette.

6. The method of Claim 1, wherein the step of introducing said universal interfering RNA comprises administering to said target cells a universal interfering RNA synthesized outside of the target cells.

5 7. The method of Claim 1, wherein said universal target RNA is located in a non-coding region of the chimeric RNA transcript.

8. The method of Claim 1, wherein said chimeric RNA transcript encodes a fusion protein comprising a first amino acid sequence encoded by said subject RNA, and  
10 a second amino acid sequence encoded by said universal target RNA.

9. The method of Claim 8, wherein said universal target RNA is either at the 3' end, at the 5' end, or within the subject RNA.

15 10. The method of Claim 8, wherein said second amino acid sequence is a peptide selected from the group consisting of antigenic determinants, epitopes, biofluorescent peptides, bioluminescent peptides and enzymes including alkaline phosphatase, horseradish peroxidase, and  $\beta$ -galactosidase.

20 11. The method of Claim 1, further comprising the steps of:  
detecting measurable differences in said plurality of target cells before and after introduction of said universal interfering RNA;  
wherein the effects of altering gene expression are revealed through the differences in said plurality of target cells before and after introduction of said universal  
25 interfering RNA.

12. A method of altering gene expression comprising:  
providing a plurality of target cells or organisms, each expressing a chimeric RNA transcript that has a subject RNA operably linked to a universal target RNA,  
30 wherein at least two of the plurality of target cells or organisms have different subject

RNAs, and wherein all of said plurality of target cells or organisms have the same universal target RNA; and

introducing into said plurality of target cells or organisms a universal interfering RNA targeting said universal target RNA,

5            wherein said target cells or organisms are capable of conducting transitive RNA interference, and chimeric RNA transcripts are degraded by a primary RNA interference response, and homologous transcripts encoded by endogenous genes are degraded by a transitive RNA interference response.

10            13.     The method of Claim 12, wherein the step of introducing said universal interfering RNA is by way of introducing a DNA that directs the in vivo transcription of said universal interfering RNA.

15            14.     The method of Claim 12, wherein each of said target cells or organisms contains a transcription cassette capable of directing the expression of said universal interfering RNA and the step of introducing said universal interfering RNA is by way of inducing the in vivo transcription of said universal interfering RNA from said transcription cassette.

20            15.     The method of Claim 12, wherein said target cells or organisms are selected from the group consisting of plant cells, nematode cells, plants, and nematodes.

16.     A kit for practicing the method of Claim 2 comprising, in a compartmentalized carrier:

25            a plurality of expression vectors each being capable of directing the expression of a chimeric RNA transcript that has a subject RNA operably linked to a universal target RNA, wherein at least two of the plurality of expression vectors have different subject RNAs, and wherein all of said plurality of expression vectors have the same universal target RNA; and

30            a universal interfering RNA targeting said universal target RNA, or an interfering RNA transcription vector that directs the expression of said universal interfering RNA.

17. The kit of Claim 16, wherein said plurality of expression vectors are arranged in an addressable array on a solid support.

5 18. A kit for practicing the method of Claim 1 comprising, in a compartmentalized carrier:

a plurality of target cells or organisms each expressing a chimeric RNA transcript that has a subject RNA operably linked to a universal target RNA, wherein at least two of the plurality of target cells or organisms have different subject RNAs, and wherein all of  
10 said plurality of target cells or organisms have the same universal target RNA; and

a universal interfering RNA targeting said universal target RNA, or an expression vector that directs the expression of said universal interfering RNA.

19. The kit of Claim 18 wherein said plurality of target cells or organisms is  
15 selected from the group consisting of plant cells, plant tissues, plant seeds, nematode cells, plants and nematodes.

20. The kit of Claim 18, wherein said plurality of target cells or organisms are arranged in an addressable array on a solid support.